

Fig. 1

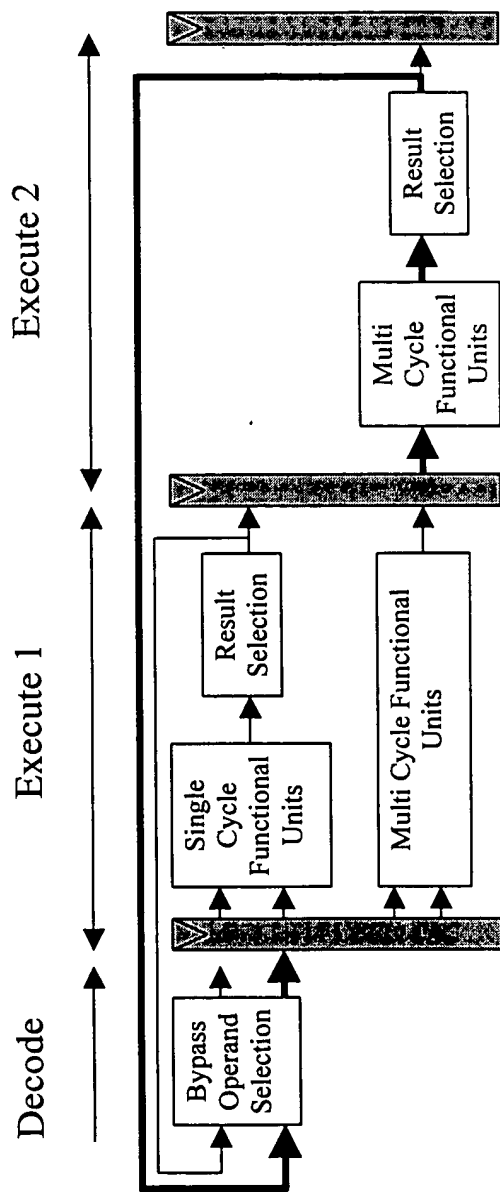


Fig. 2

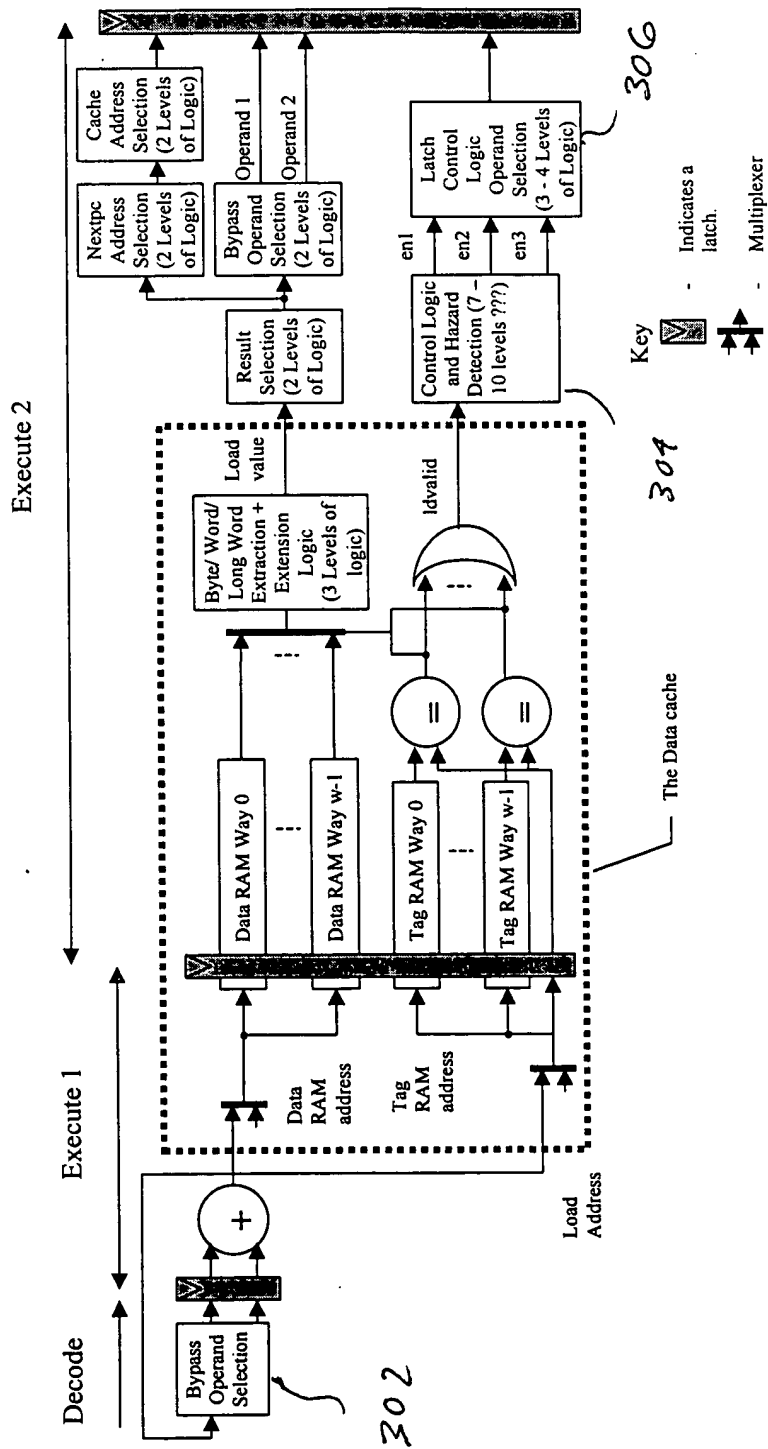


Fig. 3

Fig. 3a.

Pipeline Stage						
Reference Step	0	F	D	E1	E2	WB
350	Ld					
352	Mov	Ld				
354	Add	Mov	Ld			
356		Add	Mov	Ld		
358			Add	Mov	Ld	
360			Add		Mov/Ld	
362			Add		Ld	Mov
364				Add		Ld
366					Add	
368						Add

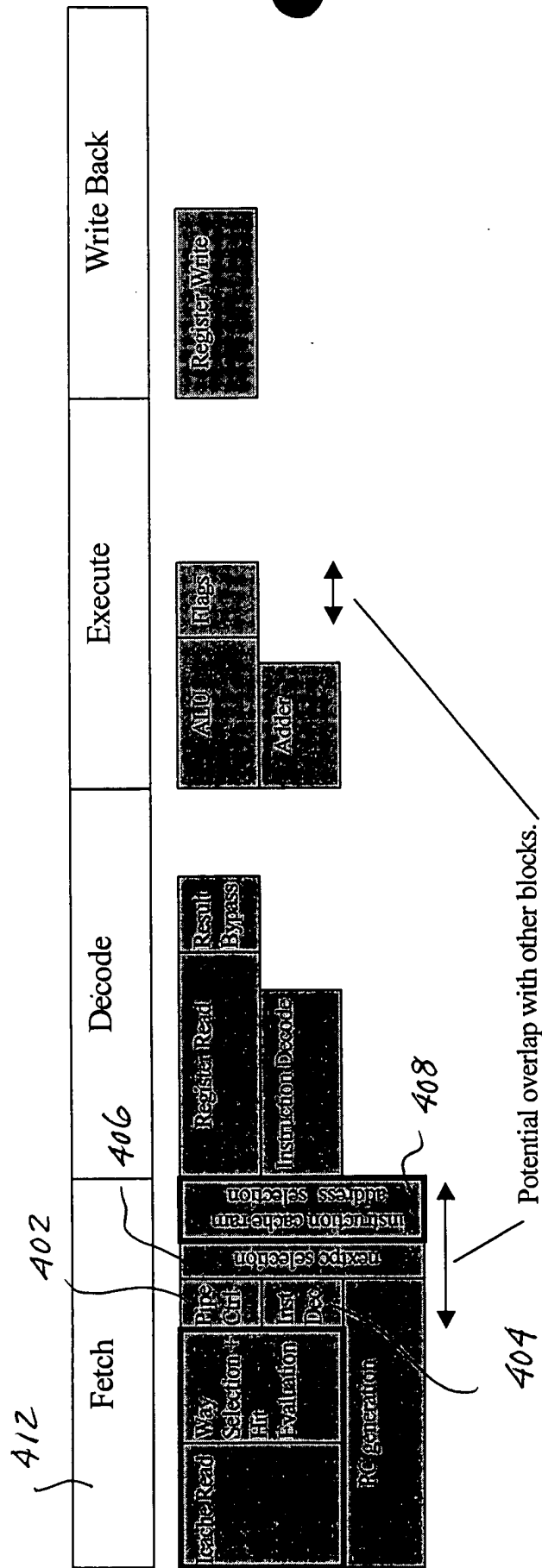


Fig. 4

Pipeline Stage 1

Pipeline Stage 2/0

Pipeline Stage 3

Pipeline Stage 4

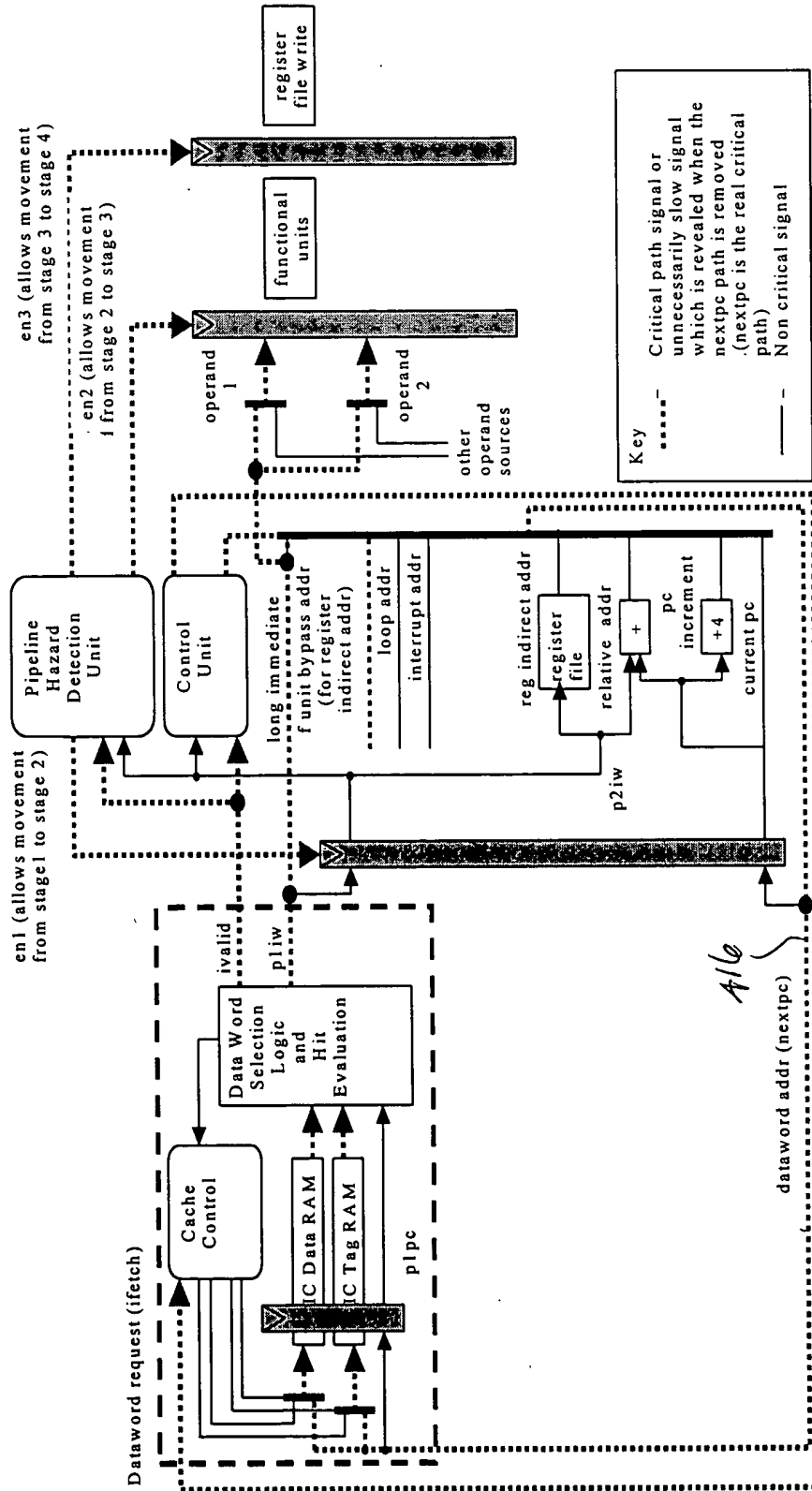
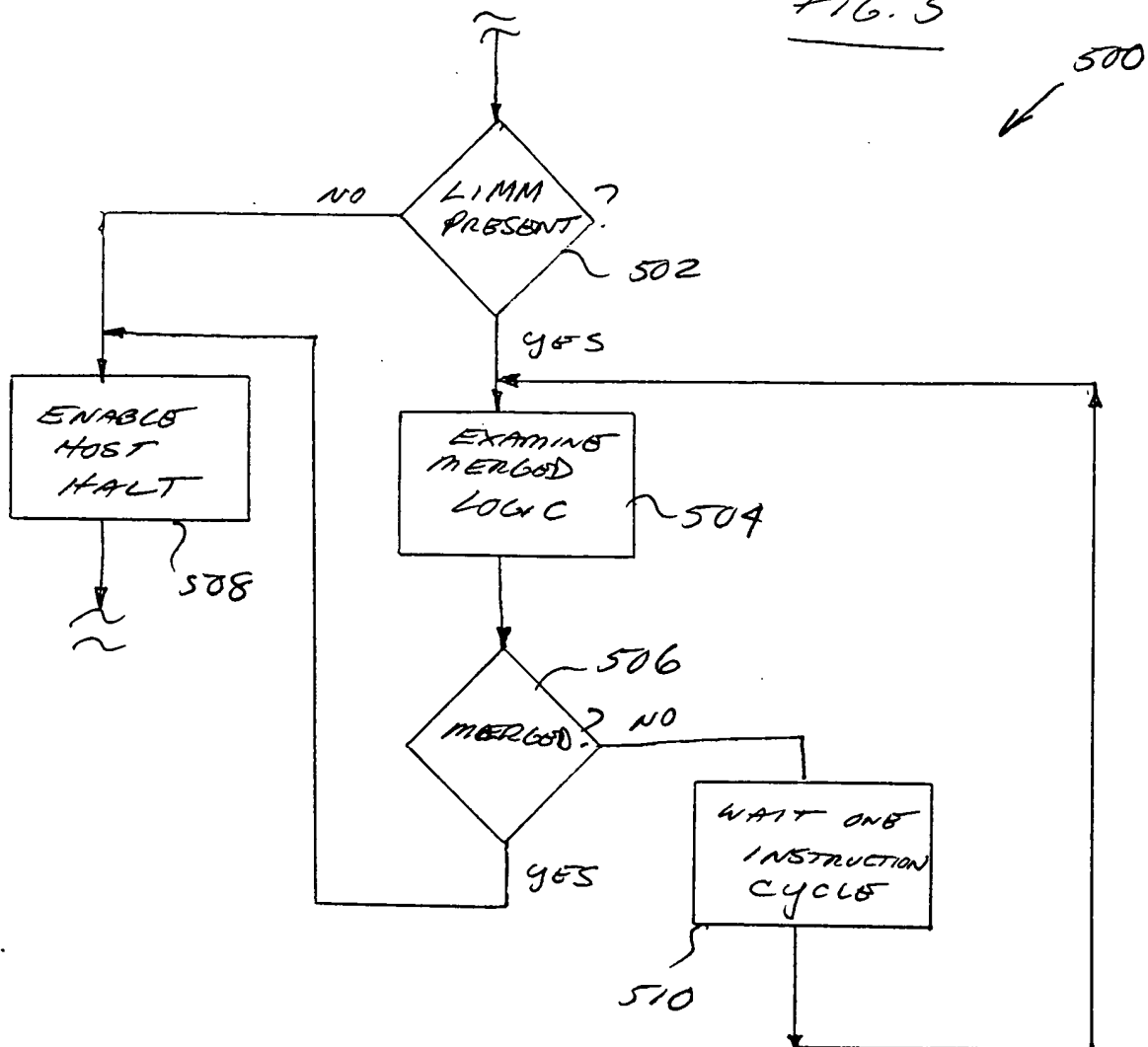


Fig. 4a

400

FIG. 5



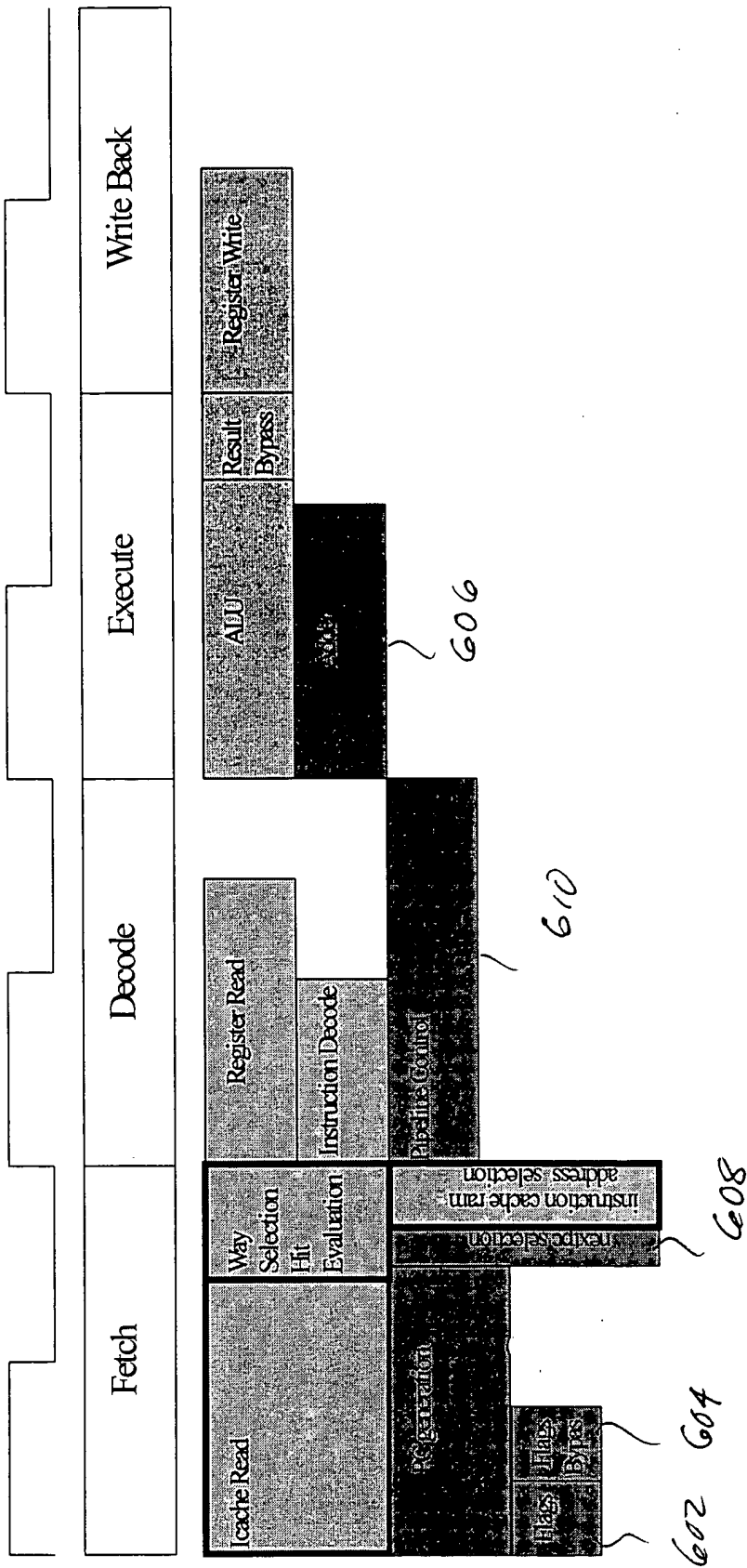


Fig. 6



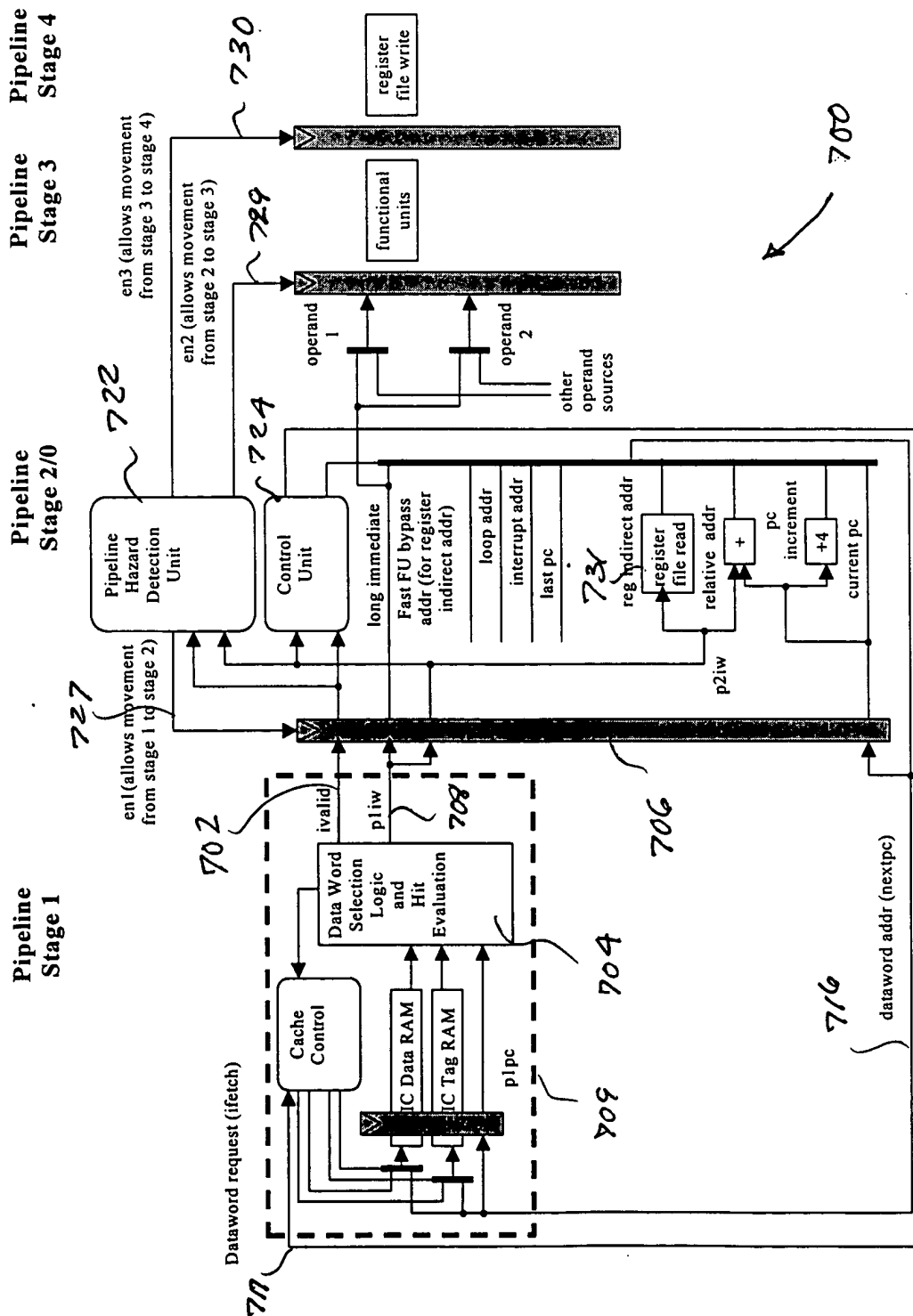


Fig. 7

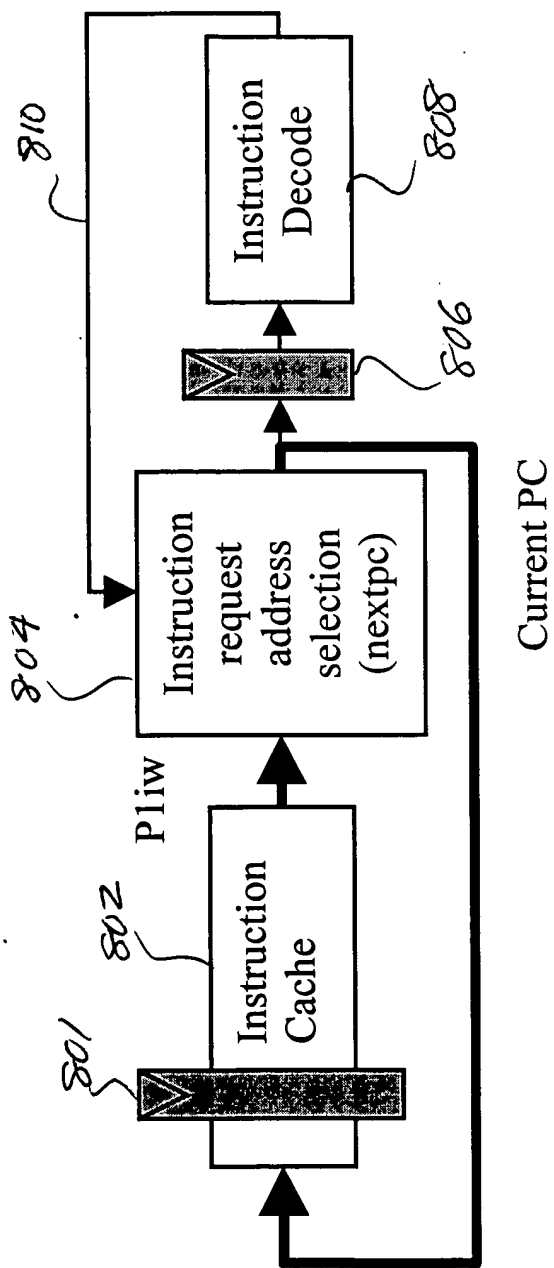


Fig. 8

**Fig. 8a**

Reference Step	Instruction Fetch Address (Inst Addr: next_pc)	Pipeline Stage			
		Fetch (Inst Addr: current_pc)	Decode (Inst Addr: last_pc)	Execute	Write- back
820	J.d <sub>A</sub>				
822	Brk <sub>B</sub>	J.d <sub>A</sub>			
824	Target <sub>C</sub>	Brk <sub>B</sub>	J.d <sub>A</sub>		
826		Target <sub>C</sub>	Brk <sub>B</sub>	J.d <sub>A</sub>	
828			Brk		J.d <sub>A</sub>
830			Restart		
			Brk		
832	Add <sub>B</sub>		Restart		
			Brk		
834	Target <sub>C</sub>	Add <sub>B</sub>			
836	Target2 <sub>C</sub>	Target <sub>C</sub>	Add <sub>B</sub>		
838	Target3 <sub>C</sub>	Target2 <sub>C</sub>	Target <sub>C</sub>	Add <sub>B</sub>	

**Fig. 8b**

Reference Step	Instruction Fetch Address (Inst Addr: next_pc)	Pipeline Stage			
		Fetch (Inst Addr: currentpc)	Decode (Inst Addr: last_pc)	Execute	Write- back
840	Add <sub>A</sub>				
842	Brk <sub>B</sub>	Add <sub>A</sub>			
844	Mov <sub>C</sub>	Brk <sub>B</sub>	Add <sub>A</sub>		
846		Mov <sub>C</sub>	Brk <sub>B</sub>	Add <sub>A</sub>	
848			Brk Restart		Add <sub>A</sub>
850			Brk Restart		
852	Add <sub>B</sub>		Brk Restart		
854	Mov <sub>C</sub>	Add <sub>B</sub>			
856	Mov2 <sub>C</sub>	Mov <sub>C</sub>	Add <sub>B</sub>		
858	Mov3 <sub>C</sub>	Mov2 <sub>C</sub>	Mov <sub>C</sub>	Add <sub>B</sub>	

**Fig. 8c**

Reference	Instruction Fetch Address (Inst Addr: next_pc)	Pipeline Stage			
		F (Inst Addr: currentpc)	D (Inst Addr: last_pc)	E	W
860	J.d <sub>A</sub>				
862	Brk <sub>B</sub>	J.d <sub>A</sub>			
864	Target <sub>C</sub>	Brk <sub>B</sub>	J.d <sub>A</sub>		
866		Target <sub>C</sub>	Brk <sub>B</sub>	J.d <sub>A</sub>	
868			Brk Restart		
870			Brk Restart	J.d <sub>A</sub>	
872	Add <sub>B</sub>		Brk Restart	J.d <sub>A</sub>	
874	Target <sub>C</sub>	Add <sub>B</sub>		J.d <sub>A</sub>	
876	Target <sub>2C</sub>	Target <sub>C</sub>	Add <sub>B</sub>	J.d <sub>A</sub>	
878	Target <sub>3C</sub>	Target <sub>2C</sub>	Target <sub>C</sub>	Add <sub>B</sub>	J.d <sub>A</sub>

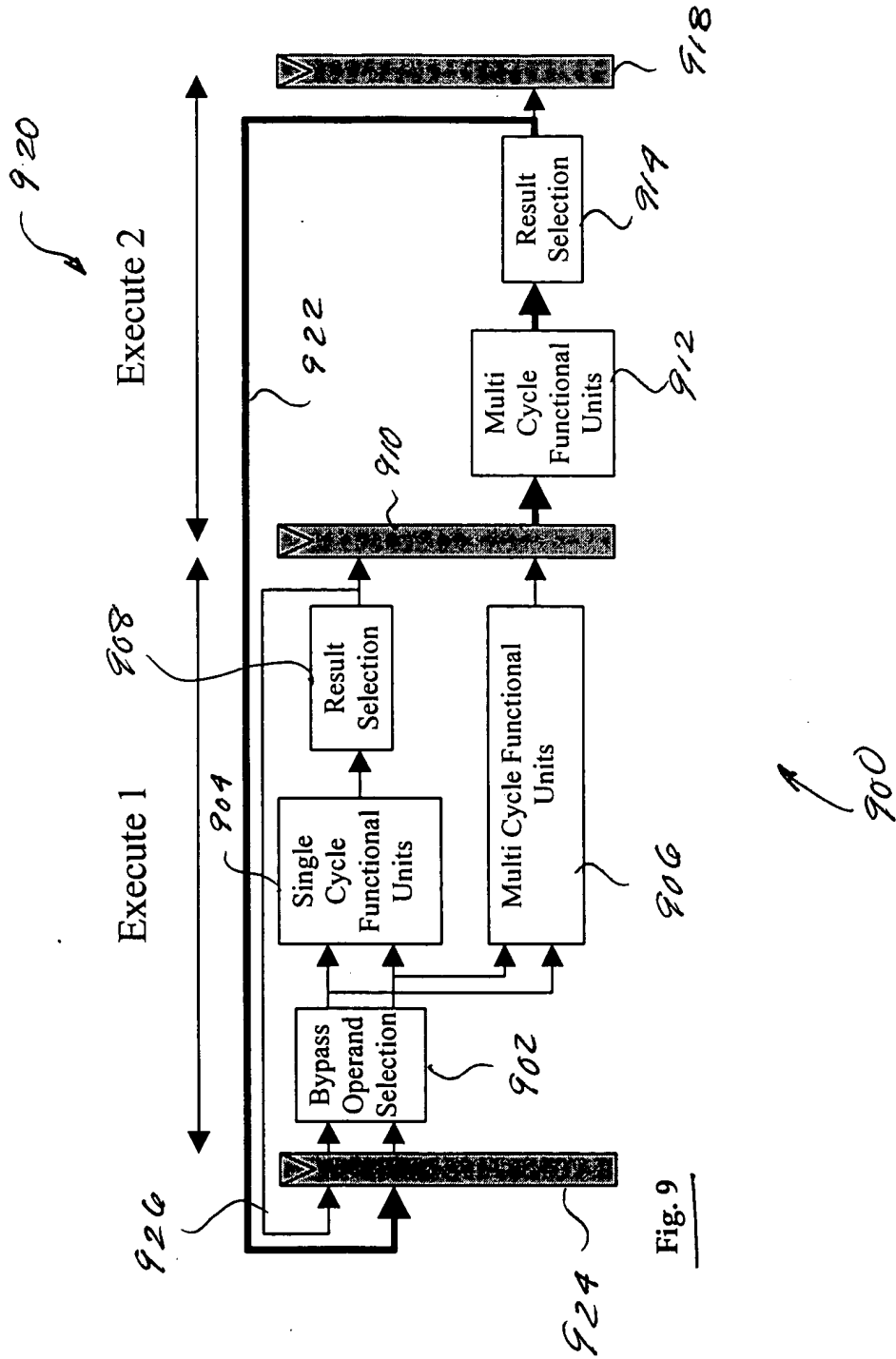
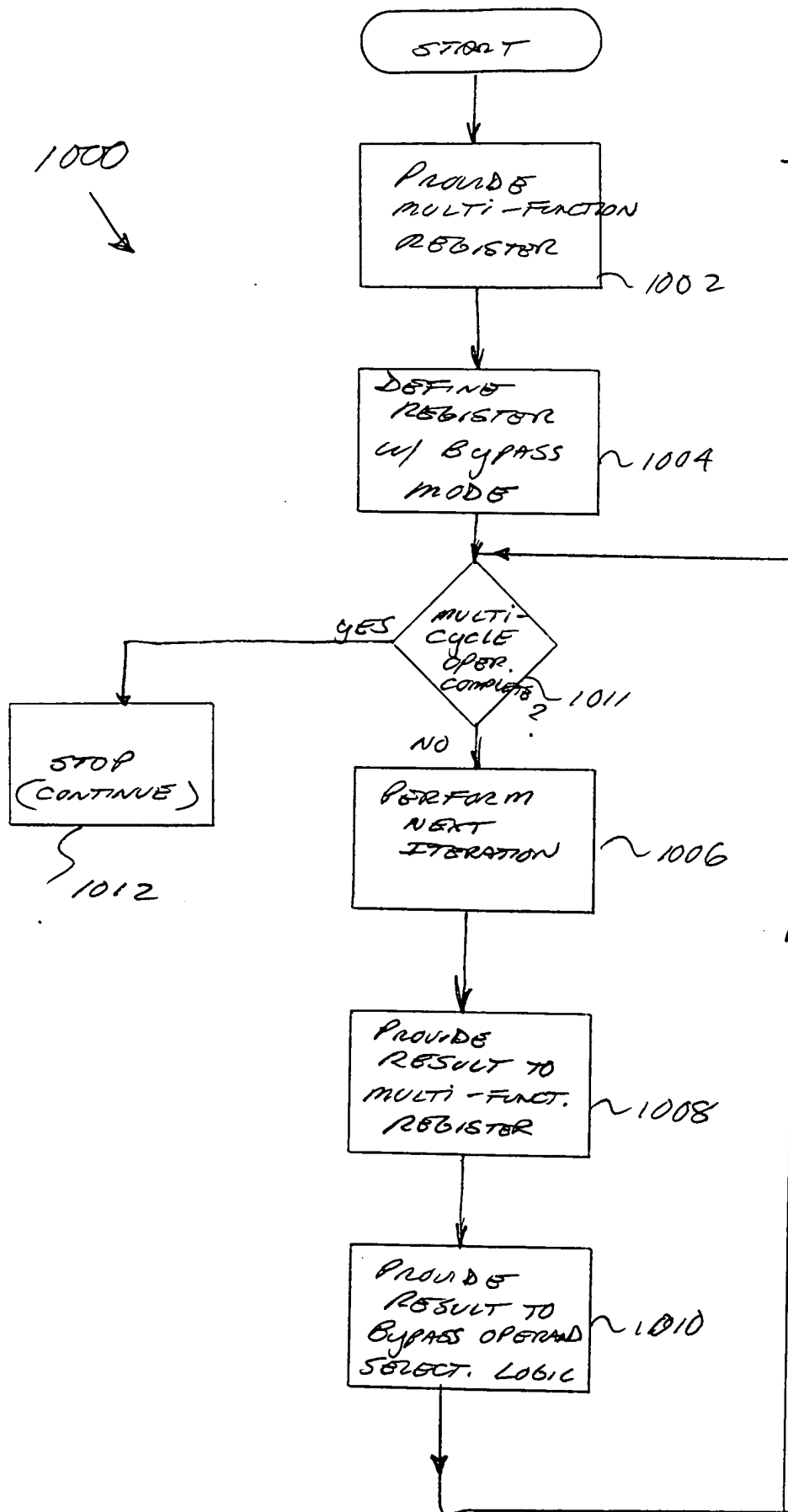


Fig. 9

1000

FIG. 10



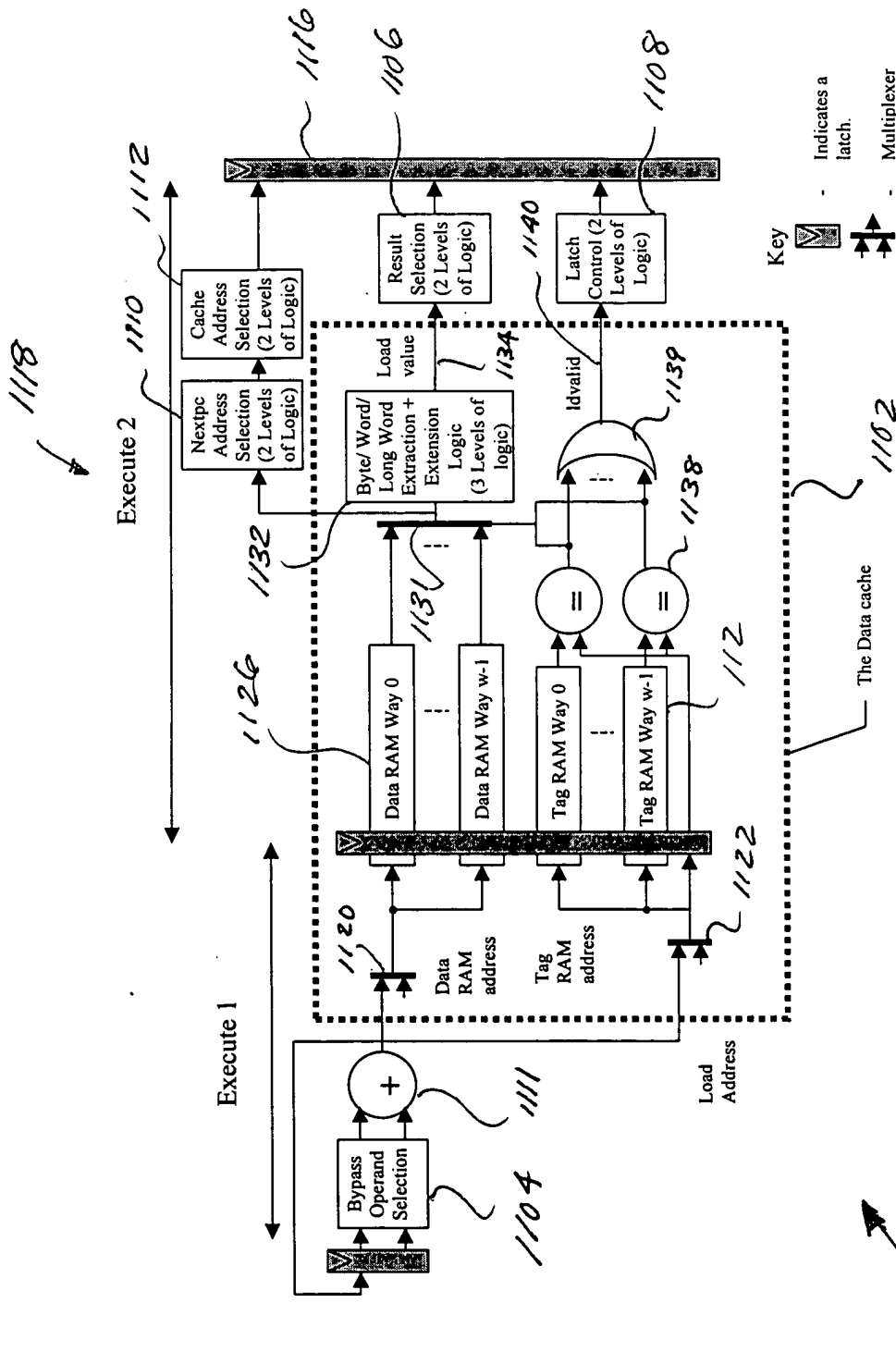


Fig. 11



Fig. 11a



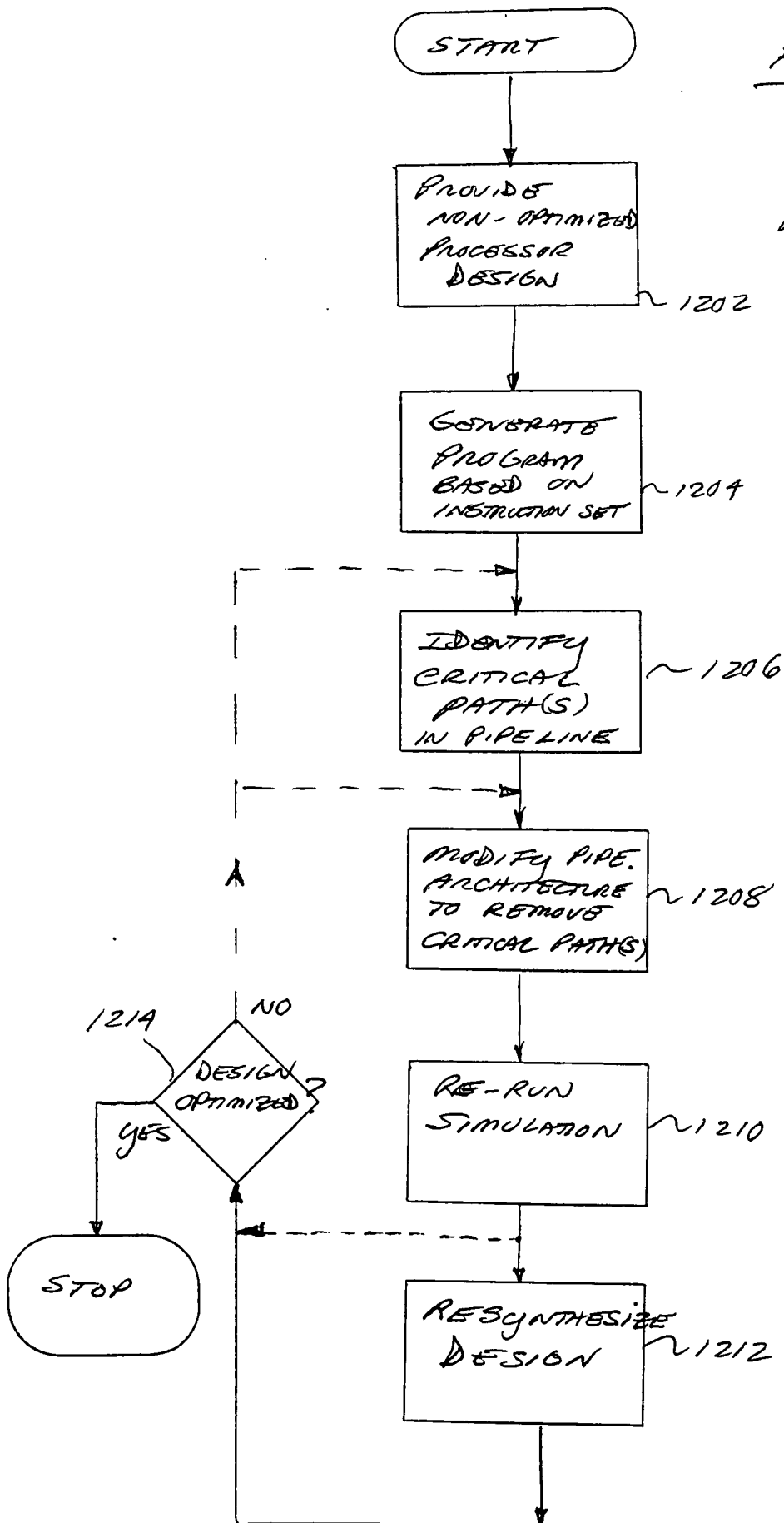
Reference	Pipeline Stage					
	0	F	D	E1	E2	WB
1174	Ld					
1176	Mov	Ld				
1178	Add	Mov	Ld			
1180		Add	Mov	Ld		
1182			Add	Mov	Ld	
1184				Add	Mov/Ld	
1186				Add	Ld	Mov
1188				Add		Ld
1190					Add	
1192						Add

FIG. 12



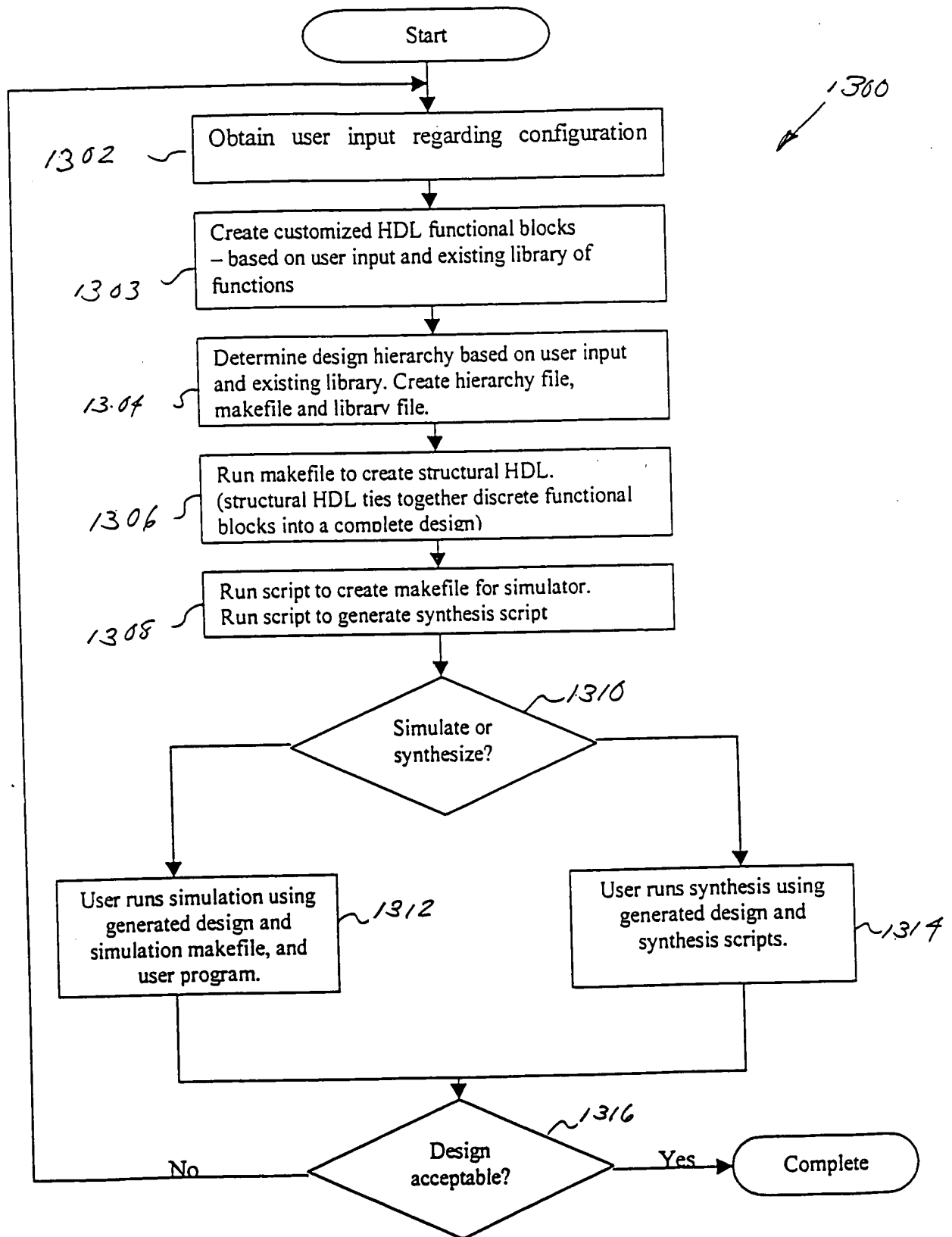


FIG. 13

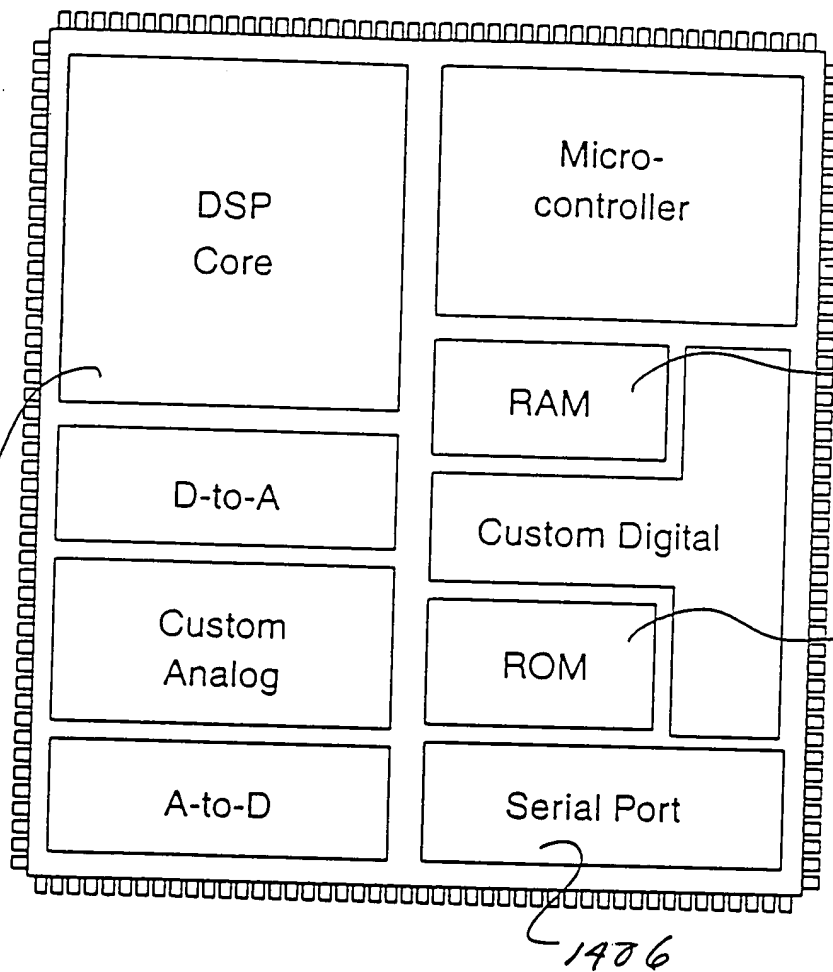


FIG. 1A

FIG. 15

